Experimental solution for 2D surface

By using a scanning tunnelling microscope to look at images of individual atoms on the surface of a GaAs crystal and charting their presence or absence as they form islands at high temperatures, researchers in the physics department of the University of Arkansas (led by Paul Thibado and Vincent P LaBella) have found that the spontaneous formation of islands on the two-dimensional surface follows the Ising model of many-body physics (reported in *Phys. Rev. Lett.*).

This describes how a large collection of objects interacts with their neighbours (developed for one dimension by Earnst Ising in 1926 to explain the spontaneous magnetisation of magnetic materials as they are cooled from high temperatures, and extended 20 years later by Lars Onsager to two dimensions).

"We have defined what governs atomic movement at the surface", the researchers said. Applying the Ising model will allow better understanding and manipulation of GaAs, e.g. for modelling the growth of a device.

University of Arkansas
Tel: +1-501-575-5555

MOCVD News

Motorola to use Emcore tools, processes and epi

After supplying production quantities of pHEMT epi wafers to Motorola's CS-1 fab for several months from its Electronic Materials (E^2M) foundry division, EMCORE (Somerset, NJ, USA) has an agreement to supply two fully automated MOCVD production tools (from EMCORE's TurboDisc division), epi pHEMT process technology (to ensure compatibility between E^2M- supplied wafers and Motorola's internal production on the EMCORE tools), as well as orders for electronic device epi wafers.

EMCORE's CEO and president Reuben Richards reckons the agreement shows "the power of supplying a vertically integrated solution that enables our customers to quickly bring industry-leading technology to the market place."

* Due to "stronger-than-expected demand for wireless materials", in Q2/2000 EMCORE set records for revenue of US$23.9m (48.9% up on Q2/99 and 45% sequentially) and backlog up 60% to US$84m. Highlights include:
• US$125m raised in a public share offering to expand manufacturing capacity for new communications products and to fund joint ventures;
• first-phase expansion of New Jersey fab nearly doubled production capacity of GaInP HBTs and pHEMTs; began second phase to again double capacity for 4″ and 6″ wafers;
• first to ship solar cells of more than 25% efficiency (beating the 19% of industry-standard silicon-based cells) as well as commercial 2.5 Gpbs 850 nm oxide VCSELs.

MBE Briefs...

EPI MBE Products Group has completed expansion of its 75,000 ft² facility in St. Paul, MN, USA for production of GEN2000 Multiwafer Production MBE Systems. EPI has also bought more than 871,000 ft² of surrounding property for future expansion.

*** EPI MBE has also opened a corporate sales and service office for the western US in Santa Clara, CA, USA (in the heart of Silicon Valley) headed by Ken Bui, Sales Manager - West Coast:**
Tel: +1-408-216-4775;
Fax +1-408-216-4776.

Thermo Instruments Corp's **VG Semicon** (East Grinstead, UK) has orders in excess of US$10m from RF Micro Devices for several more production V100 MBE systems for its HBT fab in Greensboro, NC, USA ("the largest MBE operation in the world", according to RFMD's Director of MBE Operations Larry Kapitan).

*** Cumulative sales of VG Semicon's multi-wafer MBE systems (including the V100 and V150) - primarily used for epi deposition in GaAs RFICs - now exceed 60 units.**

MBE Technology Pte Ltd of Singapore has bought two Riber 6000 multi-wafer MBE machines: the first delivered in April, the next for October (with an option on a third in early 2001). "The industry is quickly moving to 6″ manufacturing", says MBE Technology USA Inc's CEO & president Steve Schoenly.

He adds, "Several large blanket orders for 4″ wafers...will quickly be converted to 6″ this year alone". MBE will triple capacity this year. A public offering is being considered to fund expansion plans.